DOI Work Activity 4P: Maintain Hydropower Facilities

Program Area:	Maintenance
End Outcome Goal:	UEO 6 – Generate Hydropower, Consistent with Applicable State and Federal Law, in an Environmentally Responsible and Cost-Efficient Manner
Intermediate Outcome Strategy:	UIO 6.1 - Operate and Maintain Reliable, Safe and Secure Power Facilities
DOI Sub process:	4c – Provide facilities

Examples/Notes: **Maintenance** is the upkeep of constructed facilities and structures and capitalized equipment necessary to realize the originally anticipated useful life of the fixed assets. Methods of accomplishing Maintenance are:

1. **Annual Maintenance** is Maintenance performed to repair failures during the year in which they occur. Includes preventive and/or cyclic maintenance performed in the year in which it is scheduled to occur. Annual Maintenance can be preformed through:
   - **Repair:** Work to restore a damaged, broken, or worn-out facility, facility component, or item of equipment to normal operating condition.
   - **Preventive Maintenance:** Scheduled servicing; repairs; inspections; adjustments; and replacement of parts that result in fewer breakdowns and fewer premature replacements and achieve the expected life of facilities and equipment
   - **Cyclic Maintenance**: Preventive maintenance activities that recur on a periodic and scheduled cycle of greater than 1 year.
2. **Deferred Maintenance** is Maintenance that was not performed when it should have been or when it was scheduled and which, therefore, was put off or delayed for a future period. This also includes work performed to correct facilities deficiencies where there is noncompliance to codes (e.g. life safety, ADA, OSHA, environmental, etc.) and other regulatory or Executive Order compliance requirements. Deferred Maintenance can be preformed through:
   - **Repair:** Work to restore a damaged, broken, or worn-out facility, facility component, or item of equipment to normal operating condition.
   - **Rehabilitation** (without expansion or change of function): Renovation of an existing facility or any of its components in order to restore and/or extend the life of the facility.
   - **Replacement:** Substitution or exchange of one existing facility, facility component, or item of equipment for another having the capacity to perform the same function.
   - **Demolition**: Dismantling and removal, or surplus of a deteriorated or otherwise unneeded facility or item of equipment, including necessary clean-up work.

Work Activity Description: Includes all work necessary to maintain and extend the life of the physical plant infrastructure to provide generation capability, reliability, availability, and transmission on a long-term basis. Examples include circuit breaker replacements, overhaul of generating units, refurbishment of ring gate seal and maintenance expenses and the maintenance portion of joint costs. This activity entails performing Maintenance or Deferred Maintenance on existing facilities and the use of a Facilities Management Systems (FMS) to ensure that data (including costs) accurately reflects the level(s) of work performed. This activity includes all types of work and effort to needed to maintain and repair these type facilities. These costs include material, labor, contract services, project planning (including any site reviews, clearances and permits not previously completed), surveys, design, repair, rehabilitation, signage, accessibility retrofits and enhancements, energy conservation, inspections, corrective actions in response to facility audits, equipment rental, and contract supervision.

Output: Power capacity maintained.	**Unit of Measure:** Nameplate megawatt capacity maintained. The nameplate megawatt capacity of a

	power facility is the total power production capacity estimated in the original facility design.
Inputs: Planned and funded maintenance projects/activities, labor, materials, equipment, contracts, facility review recommendations, required preventative maintenance and replacement of deficient fixed equipment and installed facilities, congressional authorization/directive, decision document, customer requests needed for above activities.	**Cost Drivers:** Policies, identified maintenance requirements, regulations, requests, number of facilities and/or facility components generating maintenance, catastrophic events, condition assessments, geographic location and site conditions, cost of technology, contract negotiations, accessibility of site, size of project, non-reimbursable costs, labor availability and specialty, frequency of use, age of facilities, accessibility of features requiring repair, ability to interfere with required releases, size complexity of facilities.

System Interfaces: At present, information will be gathered from Time and Procurement reporting. In the future, this data will be gathered from Bureau Facilities Management Systems.

DOI Program Area Contact: Michael J. Kastle (OS/PAM), Kerry Whitford (BOR)

DOI Work Activity 4R: Increase Power Supply

Program Area:	Water and Power
End Outcome Goal:	UEO 6 – Generate Hydropower, Consistent with Applicable State and Federal Law, in an Environmentally Responsible and Cost-Efficient Manner
Intermediate Outcome Strategy:	UIO 6.2 - Improved Power Generation Management to Maximize Supply
DOI Sub process:	4c – Provide facilities

Examples/Notes:

Work Activity Description: Those physical plant modifications undertaken that **appreciably** increase the amount of potential megawatt capacity. This includes capital investments such as upgrades, turbine runner replacements and turbine rewinds to existing generating units.

Output: Increased power capacity	**Unit of Measure:** Increased megawatt capacity. The output is the increase in potential power production in megawatts from upgrades, replacements and rewinds. Increases from rewinds are defined as the original nameplate capacity of the generating unit since the rewind is, in theory, bringing the unit back to its original level of efficiency. Increases from unit replacements are defined by the nameplate capacity of the new unit. Increases from other improvements are determined through “uprate studies”.
Inputs: a) Labor and associated indirect costs, materials, equipment b) Power customer requests for additional power	**Cost Drivers:** Magnitude/complexity of capital investment required.

System Interfaces:

DOI Program Area Contact: Kerry Whitford (BOR)

DOI Work Activity 4T: Operate Power Facilities

Program Area:	Water and Power
End Outcome Goal:	UEO 6 – Generate Hydropower, Consistent with Applicable State and Federal Law, in an Environmentally Responsible and Cost-Efficient Manner
Intermediate Outcome Strategy:	UIO 6.1 - Operate and Maintain Reliable, Safe and Secure Power Facilities
DOI Sub process:	4c – Provide facilities

Examples/Notes:

Work Activity Description: Includes all work costs associated with operation of power plants. This includes day-to-day and routine activities necessary to perform operational functions to provide and transmit generation and unit availability.

Output: Power capacity operated	**Unit of Measure:** Nameplate megawatt capacity operated. The nameplate megawatt capacity of a power facility is the total power production capacity estimated in the original facility design
Inputs: a) Labor and associated indirect costs, materials, joint facility costs, movable property, service facilities, service contracts. b) Authorizing legislation to operate the facility.	**Cost Drivers:** Number, size and complexity of generating units to meet current, daily, and hourly demand.

System Interfaces:

DOI Program Area Contact: Kerry Whitford (BOR)

DOI Work Activity 4V: Construct Hydropower Facilities

Program Area:	Construction
End Outcome Goal:	UEO 6 – Generate Hydropower, Consistent with Applicable State and Federal Law, in an Environmentally Responsible and Cost-Efficient Manner
Intermediate Outcome Strategy:	UIO 6.2 – Improved power generation management to maximize supply
DOI Sub process:	4c – Provide facilities

Examples/Notes: Capital Improvement is the construction of a new facility, or the expansion or extension of an existing facility to accommodate a change of function or unmet programmatic needs. Methods of accomplishing capital improvements are:

New Construction: The erection, installation, or assembly of a new facility.
Alteration (for change of function, without expansion): Work to change the function of an existing facility or any of its components.
Expansion: Increasing the capacity or size of a facility to serve needs different from, or significantly greater than, those originally intended.

Work Activity Description: This activity entails construction of new or expanded hydroelectric power plants, including, but not limited to major rebuild of inactive generating plants/units and/or the installation of additional generating units at existing facilities or entirely new power plants. This activity includes all types of work and effort to needed to construct these type facilities. These costs include material, labor, contract services; project planning (including any site reviews, clearances and permits not previously completed), surveys, design, minor construction, signage, accessibility retrofits and enhancements, energy conservation, inspections, corrective actions in response to facility audits, equipment rental, and contract supervision.

Output: Additional power capacity constructed.	**Unit of Measure:** Additional megawatt capacity constructed. Count the additional power production capacity from construction, additions and major rebuilds once the construction project is complete. The additional power is defined in megawatt capacity
Inputs: Planned and funded construction projects/activities, labor, materials, equipment, contracts, facility review recommendations, congressional authorization/directive, decision document, customer requests needed for above activities.	**Cost Drivers:** Policies, identified maintenance requirements, regulations, requests, number of facilities and/or facility components generating maintenance, catastrophic events, condition assessments, geographic location and site conditions, cost of technology, contract negotiations, accessibility of site, size of project, non-reimbursable costs, labor availability and specialty, frequency of use, age of facilities, accessibility of features requiring repair, ability to interfere with required releases, size complexity of facilities.

System Interfaces: At present, information will be gathered from Time and Procurement reporting. In the future, this data will be gathered from Bureau Facilities Management Systems.

DOI Program Area Contact: Michael J. Kastle (OS/PAM), Kerry Whitford (BOR)

DOI Work Activity 9U: Support Hydropower Licensing/Relicensing

Program Area:	Lands
End Outcome Goal:	UEO 6 – Generate Hydropower, Consistent with Applicable State and Federal Law, in an Environmentally Responsible and Cost-Efficient Manner
Intermediate Outcome Strategy:	UIO 6.1 - Operate and Maintain Reliable, Safe and Secure Power Facilities
DOI Sub process:	4e - Acquire or convey interests in land or water

Examples/Notes:

Work Activity Description: Costs coded to this work activity include: resource data collection and studies, NEPA, ESA and NHPA reports, Section 106 compliance, Section 7 consultations, GIS support, land status checks, application evaluation, docketing, coordination with FERC and external groups or customers and other supporting efforts for the hydropower licensing and relicensing program.

Output: License applications reviewed.	**Unit of Measure:** Number of licenses reviewed
Inputs:	**Cost Drivers:**

System Interfaces:

DOI Program Area Contact: